

REMARKS

Claims 1 and 3-29 are pending in the Application. Claims 1-28 were rejected in the Office action mailed January 28, 2008. Claims 1, 3, 6, 10, 14, 17-19, and 26 are amended by this response. Claim 2 is cancelled, without prejudice or disclaimer. Claim 29 is added. Claims 1, 6, and 18 are independent claims, while claims 3-5 and 29, 7-17, and 19-28 depend either directly or indirectly from independent claims 1, 6 and 18, respectively.

The Applicant respectfully requests reconsideration of claims 1 and 3-28, and consideration of new claim 29, in light of the following remarks.

Objections to Claims

Claims 17 and 26 were objected to in the January 28 Office Action for minor grammatical errors. Specifically, claim 17 was objected to because it recited a "wireless electronic device network," but depended from claim 6 which recited an "electronic device network." Applicant has complied with the Examiner's suggestion to remove the term "wireless" from claim 17. Claim 17 was also rejected under 35 U.S.C. §112 for insufficient antecedent basis for the "wireless electronic device network" term. Applicant submits that the previously mentioned amending of claim 17 renders that rejection moot. Moreover, Applicant notes that the removal of the "wireless" term is not intended to reduce the scope of any claim to exclude wireless networks (see, for example, claim 13 wherein the electronic device network is one of a wired and a wireless network). Additionally, claim 26 was objected to due to a misspelling of the word "and" as "an." Applicant submits that in light of the amendment to claim 26 discussed below, the objection raised in the January 28 Office Action is rendered moot.

Rejection of Claims Under 35 U.S.C. §102(e)

Claims 1-4, 6-9, 13-15, 17-18, and 23-28 were rejected under 35 U.S.C. §102(e) as being anticipated by United States Patent No. 6,671,703, Thompson et al.

(hereinafter "Thompson"). Applicant respectfully traverses the rejection. Nevertheless, Applicant has amended claims 1 to more clearly describe claimed subject matter.

Claim 1 has been amended to recite a generator of difference information comprising, *inter alia*, an array storing operations for tree-based encoding of the first and second streams of information, wherein the generator outputs difference information comprising a differencing instruction set comprising an hierarchical tree map and a plurality of operators represented by variable length codes based on a frequency of occurrence of the associated operations. Support for this amendment can be found, for example, at Paragraphs 22, 50, and 54-55 and Fig. 1A of the Specification. For example, in Fig. 1A, the "1" at the highest level node indicates that there is at least one "1" at the second level. The "1" at the second level node (second from the left in Fig. 1A) indicates that there is at least one "1" at the four nodes of the third level associated with that particular second level node. The "0" at the other three second level nodes indicates that there are no "1"s at any nodes on subsequent levels associated with those three particular second level nodes. Applicant respectfully submits that Thompson cannot anticipate claim 1 (or any of the claims that depend from claim 1) because Thompson does not teach or disclose such a generator of difference information. For example, in its comments addressing claim 2, the Office Action cited Thompson as disclosing a differencing component for computing and expressing the difference information employing a differencing instruction set at column 3, lines 35-43, which state:

In this approach, the server 14, compares an original file with a revision of the file, and generates a delta modification file which describes the changes that need to be made to the original file to create the revised file on the client 16. This delta or modification file has been transmitted to the remote user, where the changes, as described in the delta modification file, will be applied to the remote users copy of the original file to create the revised file.

Applicant respectfully submits that such a system does not disclose outputting a differencing instruction set comprising an hierarchical tree map as presently claimed (see, for example, paragraphs 54-55 and Fig. 1a for example and discussion of

hierarchical tree), nor a differencing instruction set comprising a plurality of operators represented by variable length codes based on frequency of occurrence of the associated operations. For example, in the portions of Thompson surrounding the cited portion above, Thompson describes the use of a counter (column 3, lines 43-45: "Generally, the file difference synchronization method will go along comparing bytes in both files, as long as they match, the count is increased, which will be the amount for a skip record") and a modification file utilizing a count (column 3, lines 65-67: "The delta modification file will be made up of records, each having a type, followed by a length and some having data following"), as opposed to an hierarchical tree map as described and presently claimed. As a result, Thompson cannot anticipate claim 1, or claims dependent from claim 1.

Claim 2 has been withdrawn. Claim 3 has been amended to change its dependency from claim 2 to claim 1. With regard to claim 4, the Office Action indicated that Thompson disclosed an encoder providing tree-based encoding employing a block-based hierarchical representation, and the encoder segmenting blocks during encoding at column 3, lines 45-57, which state:

When there is a mismatch, a token's worth of bytes at the mismatch point is grabbed from both the original file and revision file. With the token from the original file, there is an attempt to find that token in the revision file. If the matching token is found, it is called a "sync" and there is an assumption that there was an insert. Likewise, with the token from the revision file there is an attempt to find it in the original file. If a match is found, it is called a "sync" and there is an assumption that there has been a delete. If neither is found, then it is assumed that there was a replace of one byte, advance both file pointers, grab tokens from both files and continue to look for a sync point.

Even if, *arguendo*, the token comprises a number of bytes and therefore a segmented block of the larger data program block, Applicant respectfully submits that such an approach does not disclose a block-based hierarchical representation as required by claim 4. As a result, claim 4 is allowable over Thompson for this reason in addition to its dependence on claim 1. New claim 29 depends from claim 4 and

requires that the block based hierarchical representation employs a hierarchy of at least three levels for encoding a block of N operations, the hierarchy comprising a top level wherein each node of the top level encodes N bytes, a second level wherein each node of the second level encodes $N/4$ bytes, and a third level wherein each node of the third level encodes $N/16$ bytes. Applicant respectfully submits that claim 29 is similarly allowable.

Independent claim 6 has been amended to recite that the generator of the electronic device network additionally comprises an encoder employing a tree-based hierarchy for encoding a block of operations. Support for this amendment can be found in the Specification, for example at Paragraphs 54-55 and Fig. 1a. Applicant respectfully submits that Thompson cannot anticipate claim 6 (or any claim that depends on claim 6) because Thompson does not disclose a generator comprising such an encoder employing hierarchical blocks (see discussion above for claim 1).

Claim 14 has been amended to clarify that it includes a difference output comprising a tree map that comprises operational codes for operations comprising at least of a replace operation, a match operation, a delete operation, and an insert operation, and data characters associated with at least one of the insert operation and the replace operation. Again, because Thompson does not disclose such a tree map as required by claim 6, Thompson cannot anticipate claim 14.

With regard to claim 15, in addition to the above discussed reasons, Applicant respectfully submits that regardless of what type of processor was used, it would not be inherent to compute an operational array by consuming each of the streams in small chunks as required by claim 15.

Independent claim 18 has been amended to recite a method of generating streaming updates including, *inter alia*, computing an output from the transform operation and creating an hierarchical tree-based transform output from operators determined in the transform, wherein the hierarchical tree-based transform output comprises at least three levels for encoding a block of N operations, the hierarchy

comprising a top level wherein each node of the top level encodes N bytes, a second level wherein each node of the second level encodes N/4 bytes, and a third level wherein each node of the third level encodes N/16 bytes. As discussed above with respect to claims 1 and 6, Thompson does not teach or disclose the creation of a hierarchical tree-based transform, let alone the hierarchical tree-based transform as claimed in claim 18.

In its discussion of claim 19, the Office Action asserted that Thompson disclosed creating a tree-based transform output from operators determined in the transform at column 6, lines 50-55, which states:

If it is determined at step 102 that neither the original file 15 or revision file 19 have reach an end of file (EOF) status, then the file difference synchronization system 100 proceeds to step 103 to determine if the difference tree is at a max depth.

If it is determined at step 103 that the difference tree is at...

Applicant respectfully submits that such a disclosure of a "difference tree" does not teach or disclose a hierarchical tree-based transform, especially one as claimed in claim 18. Applicant further notes that Thompson, in other parts of its specification, makes specific reference to a binary tree (see, for example, col. 7, lines 31-33). As a result of the foregoing, Applicant respectfully submits that Thompson cannot anticipate claim 18, or any claim that depends from claim 18.

With respect to claim 23, the Office Action asserted that Thompson disclosed the method of claim 18 wherein the update facilitates conversion of the first stream of information into the second stream of information, wherein retrieving blocks of content from the second stream of information is performed at a fixed pace using a fixed block size, and wherein retrieving blocks of content from the first stream of information is performed at a variable pace using a variable block size, wherein a reference to the second stream of information is maintained and a cumulative offset is computed. The Office Action further asserted that the "size and pace of processing does not matter, as the bytes are compared to each other individually and not as a stream of information." Applicant respectfully traverses that assertion, as, regardless of whether or not bytes are compared individually, the claimed subject matter's limitations regarding the pace

and block size relate to the retrieval of content from the streams of information, not the comparison of individual bytes. As Thompson does not teach or disclose those limitations, Applicant respectfully submits Thompson cannot anticipate claim 23.

Claim 26 has been amended to clarify its requirement that encoding a node and sub-nodes in a way indicating an impossible difference is employed as an escape sequence during encoding. The Office Action cited column 4, lines 1-5 of Thompson as disclosing four types of records. The Office Action then stated it was inherent if an unrecognized code was presented, an error would be given and the data would not be processed. Applicant respectfully submits that the subject matter claimed in claim 26 does not result in an "unrecognized" code. The code is recognized as representing a combination of a node and sub-nodes representing an impossible difference. (See, for example, Specification at Paragraph 62 for example). Further, Applicant submits that, even if, *arguendo*, it is inherent that an unrecognized code would result in an error given and data not being processed, disclosing the giving of an error and not processing data does not disclose an escape sequence as claimed in claim 26. As a result of the foregoing, Applicant respectfully submits that Thompson does not anticipate claim 26.

Rejection of Claims Under 35 U.S.C. §103(a)

Claims 5, 10-12, 16, and 19-22 were rejected under 35 U.S.C. §103(a) as being obvious over Thompson as applied to claims 4, 6, 15, and 18 and further in view of U.S. Patent No. 5,973,626, Berger et al. (hereinafter "Berger"). In light of the foregoing comments regarding Thompson, Applicant submits that claims 4, 6, 15, and 18 are not anticipated by Thompson, and that therefore claims 5, 10-12, 16, and 19-22 are allowable as depending from allowable claims. Applicant respectfully traverses the rejections, as the combination of Thompson and Berger does not teach or suggest every element of the claims.

For example, claim 5 is dependent from claim 1, and therefore includes claim 1's requirement of a generator of difference information comprising, *inter alia*, an array storing operations for tree-based encoding of the first and second streams of information, wherein the generator outputs difference information comprising a

differencing instruction set comprising an hierarchical tree map and a plurality of operators represented by variable length codes based on a frequency of occurrence of the associated operations. As discussed above, Thompson does not disclose such a generator of difference information. Berger does not remedy that deficiency of Thompson, as it does not disclose a generator outputting such a differencing instruction set. For example, Berger does not disclose or suggest the hierarchical tree map of claim 1. The "tree" cited by the Office Action in Berger (i.e. Fig. 2) is a binary tree for an example Huffman prefix code, in contrast to a hierarchical tree map and a plurality of operators of claim 1. The Huffman code is a family of prefix codes. (see Berger at col. 1, lines 13-17). The presently claimed differencing instruction set comprises hierarchical tree maps, which are not prefix codes. While individual operators that may be included within the tree may be represented by variable length codes, the hierarchical tree map is not a prefix code. For example, Paragraph 55 of the Specification states that a prefix may be significant for op-codes that may be set at the leaves of the tree. The hierarchical tree, itself, however, is not a prefix. Thus, Berger does not disclose a differencing set instruction comprising a hierarchical tree map as required by the presently claimed subject matter. In any event, combining the Huffman prefix codes of Berger with the system of Thompson would not result in the hierarchical tree of the present claims. Because neither Thompson nor Berger, alone or in combination, disclose a generator outputting a differencing instruction set comprising an hierarchical tree map and a plurality of operators represented by variable length codes, that combination cannot render claim 5 obvious.

With regard to claims 10-12 and 16, those claims depend from claim 6. As discussed above, claim 6 includes a generator comprising an encoder employing a tree-based hierarchy. As discussed above, the "tree" of Berger used to determine a prefix code does not disclose or suggest such a tree-based hierarchy. With further respect to claim 10 (and claim 11 that depends from claim 10), claim 10 has been amended to claim, *inter alia*, a tree-based hierarchy employed by the encoder comprising at least three levels for encoding a block of N operations, the hierarchy comprising a top level wherein each node of the top level encodes N bytes, a second level wherein each node

of the second level encodes $N/4$ bytes, and a third level wherein each node of the third level encodes $N/16$ bytes. Applicant respectfully submits that neither Thompson nor Berger, either alone or in combination, teach or suggest such a tree-based hierarchy.

With further respect to claim 12, the Office Action asserted that Thompson, at col. 3, lines 42-57 disclose the assignment of zero values to match operators, because “[i]f the bytes match and the skip function is utilized, no token is present, and the value of the nonexistent token is therefore zero.” Applicant respectfully traverses this rejection and submits that the assignment of a value of zero to an operator that is part of an encoded tree-based hierarchy is patentably distinct from a “nonexistent token.”

Claims 19-22 depend from claim 18 and therefore include claim 18's requirement of computing an output from the transform operation and creating an hierarchical tree-based transform output from operators determined in the transform, wherein the hierarchical tree-based transform output comprises at least three levels for encoding a block of N operations, the hierarchy comprising a top level wherein each node of the top level encodes N bytes, a second level wherein each node of the second level encodes $N/4$ bytes, and a third level wherein each node of the third level encodes $N/16$ bytes. As discussed above, Applicant submits that the “difference tree” of column 6, lines 50-55 of Thompson does not teach or disclose a hierarchical tree, especially one as claimed in claim 18. From above, neither Berger nor Thompson, either alone or in combination, teach or suggest an hierarchical tree-based transform output, let alone one comprising at least three levels for encoding a block of N operations, the hierarchy comprising a top level wherein each node of the top level encodes N bytes, a second level wherein each node of the second level encodes $N/4$ bytes, and a third level wherein each node of the third level encodes $N/16$ bytes. Applicant submits that, for at least that reason, claims 19-22 are allowable over Thompson in view of Berger.

Conclusion

In general, the Office action makes various statements regarding the claims and the cited reference that are now moot in light of the above. Thus, Applicant will not address such statements at the present time. However, Applicant expressly reserves the right to challenge such statements in the future should the need arise (e.g., if such statements should become relevant by appearing in a rejection of any current or future claim).

For at least the reasons discussed above, the Applicant respectfully submits that all of claims 1 and 3-29 are in condition for allowance. Should the Examiner disagree or have any questions regarding this submission, the Applicant invites the Examiner to contact the undersigned at (312) 775-8000 for an interview.

A Notice of Allowability is courteously solicited.

Respectfully submitted,

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